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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,895	01/05/2001	Lewis Athanas	71146-49318	5024

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EDWARDS & ANGELL, LLP  
P.O. BOX 9169  
BOSTON, MA 02209

EXAMINER

DOUGHERTY, THOMAS M

ART UNIT PAPER NUMBER

2834

DATE MAILED: 02/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/755,895

Applicant(s)

ATHANAS, LEWIS

Examiner

Thomas M. Dougherty

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6 and 11 is/are rejected.
- 7) ☒ Claim(s) 2, 5, 7-10 and 12-14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6, 8 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 4, 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fleming (US 5,867,302) in view of Wilber et al. (US 5,608,282). Fleming shows (figs. 1, 3j) a thin sheet diaphragm (on which 24 rests in fig. 3j) that is curved in a plane transverse to a first direction; a support (18) that fixes one generally linear portion of said diaphragm along said first direction, and at least one actuator (20, 24) operatively coupled to said diaphragm and actuator (20) is generally aligned with, but mutually spaced from said fixed generally linear portion by a distance that produces a curvature of said diaphragm and that accommodates a movement of said diaphragm that corresponds to the travel of said actuator, said diaphragm movement being amplified with respect to said actuator travel and generally transverse to the direction of said actuator travel. The curvature shown is generally parabolic.

Fleming's at least one actuator is not oriented in a second direction transverse to said first direction. His actuator is not a piezoelectric actuator.

Wilber shows (fig. 6) a thin sheet diaphragm (12c) that is curved in a plane transverse to a first direction; a support (156, 158, 160, 162 and 164) that fixes one

Art Unit: 2834

generally linear portion of said diaphragm along said first direction, and at least one actuator (152) operatively coupled to said diaphragm (12c) and positioned in a second direction transverse to the first direction by a distance that produces a curvature of said diaphragm and that accommodates a movement of said diaphragm that corresponds to the travel of the actuator. His actuator is a piezoelectric actuator. His actuator is at least a piezoelectric bimorph and said operative coupling is generally at the center of said diaphragm to divide the diaphragm into two sections. The curvature shown is generally parabolic.

His movement is not amplified.

It would have been obvious to one having ordinary skill in the art to consider an amplification means regarding movement in Wilber's device at the time of his invention, such as is shown by Fleming, since this would allow for a greater amount of work to be accomplished in a stroke.

#### ***Allowable Subject Matter***

Claims 2, 5, 7-10 and 12-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to show or fairly suggest a thin sheet diaphragm that is curved in a plane transverse to a first direction, a support that fixes one generally linear portion of said diaphragm along said first direction, and at least one actuator operatively coupled to said diaphragm and generally aligned with, but mutually spaced from said

Art Unit: 2834

fixed generally linear portion in a second direction transverse to said first direction by a distance that produces a curvature of said diaphragm and that accommodates a movement of said diaphragm that corresponds to the travel of said actuator, said diaphragm movement being amplified with respect to said actuator travel and generally transverse to the direction of said actuator travel.

Direct inquiry concerning this action to Examiner Dougherty at (703) 308-1628.

*fmd*  
tmd

February 25, 2003

*Howard M. Dougherty*  
*HMD*